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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
VY, HUNG T

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/900,373	Applicant(s) LI ET AL.	
	Examiner Hung T Vy	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Paul Ip

PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. In response to the responses filed on 4/21/2003, claims 1-30 are pending in this application.

Claim Rejections - *35* USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 6, 10, 11, 12, 20, and 27 are confusing, vague, and indefinite. For example, claim 1 recites a channel selector tuner and an external cavity tuner without any recitation of limitations in order to configure the laser arrangement which can be read on any figures of the invention. It is not clear as how the channel selector tuner or the external cavity tuner is "configured" in order to perform the recited functions. The claim also fails to define "an external cavity tuner" in terms of any limitations as shown in any figures of the invention. Furthermore, the claim recites, "said channel selector tuner independently operable with respect to said external cavity tuner" without the recitation of any control element for performing the channel selector tuner operable function. The claim fails to comply with 35 U.S.C. 112, 2nd paragraph with the sole recitation of a channel selector tuner and an external cavity tuner without the recitation

of any limitations to define the channel selector tuner, the external cavity tuner, and a control element in order to make the claimed invention operable.

Claim 11 is confusing, vague, and indefinite. The claim recites a wavelength tuning assembly, an external cavity optical path length tuning assembly, and the wavelength tuning assembly is operable uncoupled from the external cavity optical path length tuning assembly without the recitation of any limitations to define the wavelength tuning assembly and the external cavity optical path length assembly. The sole recitation of "a wavelength tuning assembly" and "an external cavity optical path length tuning assembly" fail to define the laser apparatus operable as recited in the claim.

Claim 12 is confusing, vague, and indefinite. The laser apparatus recited in the claim does not make any sense. For example, the claim recites, "a gain medium having first and second output facets, said gain medium emitting a coherent beam from said first output facet along an optical path". A gain medium without the recitation of any active medium or a laser device fails to emit a coherent beam from the first output facet as claimed. Furthermore, the claim recites the wavelength tuning assembly configured to operate independently from the cavity optical path length tuning assembly without the recitation of any limitation to operate the wavelength tuning assembly which render the claim confusing, vague, and indefinite.

Claim 27 recites a wavelength tuning means for adjusting a channel selector, an external cavity tuning means, and means for decoupling the wavelength tuning means. The claim fails to define any limitation of the external cavity tuning means and how the extern cavity tuning means is connected with the other means recited in the claim. The

claim also fails to define any connection between the wavelength tuning means and the external cavity tuning means. It is no understood as how the decoupling means is connected in order to provide the decoupling function with the other recited means in the claim.

Claims 1-5, 7-9, 21-26 and 28-30 depend from rejected claim 1,6,10, 11, and 27 thereby render these dependent claims indefinite.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth insection 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-30 are rejected under 35 U. S. C. § 103 (e) as being unpatentable over U.S. Green et al., pub. No.: US 2002/0126345 or Zorabedian et al., U.S. Patent No. 6,282,215 in view of Mattori et al., U.S. Patent No. 6,081,539.

Regarding claim 1-19 and 27-30, Gree et al. or Zorabedian et al. disclose a laser including an external cavity, comprising: (a) a channel selector tuner (802 on Zoragedian et al. or 254 on Gree et al.) configured to tune said laser to a selected channel; and (b) an external cavity tuner (312 on Gree et al. or 162 on Zoragedian et al.) configured to tune said external cavity to a selected optical path length; (c) said

channel selector tuner independently operable with respect to said external cavity tuner (Fig, 3A on Gree et al or Fig 8A on Zoragedian et al) . It is inherent that Wavelength tuning element configured to tune orthogonal with respect to said external cavity mode tuning element (See fig 1 in Zorabedian et al.). The laser, wherein: (a) said channel selector tuner is operable according to a channel selection signal (See column 2, line 38-47); and (b) said external cavity is operable according to a cavity mode signal (See column 5, line 25-28). Zorabedian et al. disclose the laser, wherein: (a) said channel selection signal is derived from channel selector tuning data in a look-up table (824) (See column 13, line 3-6), and (b) said cavity mode signal is derived from a detector (1020) configured to measure external cavity loss associated with cavity optical path length (See column 13, line 55-65 and fig 10). Zorabedian et al. disclose the laser, wherein: (a) said channel selector tuner is operatively coupled to a first controller (260) and operable according to channel selector tuning data in a look-up table (824); and (b) said external cavity tuner is operatively coupled to a second controller (1002) and operable according to error signals derived from a detector (1020) configured to measure external cavity loss associated with cavity optical path length (See Fig 2e and 10). Green et al. or Zorabedian et al. disclose an external cavity laser apparatus, comprising: a gain medium (224 in Green et al.)(102 in Zorabedian et al.) having first (226 in Green et al) (104 in Zorabedian et al.) and second output facets (228 in Green et al.)(106 in Zorabedian et al.), said gain medium emitting a coherent beam from said first output facet (226 in Green et al.) (106 in Zorabedian et al.) along an optical path; an end mirror located (264 in Green et al.) (122 in Zorabedian et al.) in said optical path,

said end mirror and said second output facet defining an external cavity; a wavelength tuning element (250 in Green et al.)(162 in Zorabedian et al.) positioned in said optical path before said end mirror (264 in Green et al.)(122 in Zorabedian et al.); a wavelength tuning assembly (250 in Green et al.)(160 in Zorabedian et al.) operatively coupled to said wavelength tuning element (290 in Green et al.)(160 in Zorabedian et al.) and configured to adjust said wavelength tuning element, and a cavity optical path length tuning assembly operatively coupled to said external cavity and configured to adjust said external cavity optical path length; said wavelength tuning assembly configured to operate independently from said cavity optical path length tuning assembly (See Fig 2 A and page 3, paragraph 31 in Green et al. or Fig 1 A in Zorabedian et al.). Zorabedian et al. disclose the external cavity laser apparatus, wherein said detector comprises a voltage sensor (1020) configured measure voltage modulation across said gain medium and a modulation element, said modulation element operatively coupled to said external cavity and configured to introduce a modulation to said cavity optical path length, said modulation usable to derive said cavity error mode signal (See column 2, line 1-8). Green et al. disclose the external cavity laser apparatus, wherein said cavity optical path length tuning assembly comprises a thermally tunable compensating member, said thermally tunable compensating member coupled to said end mirror (See page 3, paragraph 33) and a grid (248) generator positioned in said optical path (See Fig 2 A). But Green et al. or Zorabedian et al. do not teach a channel selector tuner and extenal cavity tuner are independently operable. However, Mattori et al. teach a channel selector tuner (23) and external cavity tuner (21) are independently operable with

respect to each other by control section (5) (See Fig 1 and column 3, line 20-25 or column 8, line 44-52).

With respect to claims 20-26, the methods for tuning an external cavity laser are considered as product by process steps.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify Green et al. or Zorabedian et al. to have wavelength tuner and cavity tuner are independently operable as taught by Mattori at al. because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention.

Response to Arguments

Applicant argues that an examiner must show the motion to modify the references to arrive at the claimed invention in the MPEP § 2143.01. Applicant's argument is not persuasive and the argument is not supported by any claims. Applicant's attention is directed to Green or Zorabedian in view of claim 1. Green shows in figure 2A a channel selector tuner 252 and a channel tuner 254, an external cavity tuner 246 or 202 configured to tune the external cavity to a selected optical path length. Green also shows that the channel selector tuner is independently operable with the channel tuner 254 to adjust the external cavity with respect to the external cavity tuner as required by the claim. The Mattori et al. patent teaches and suggest that the channel selector tuner and the external cavity tuner are independently controlled. With or without the teaching of Mattori et al, Green shows every limitation as

recited in the claim. The added Mattori et al. reference teaches another way to control the channel selector tuner and the external cavity tuner independently. The examiner established a prima facie case of obviousness to combine Green in view of Mattori et al in order to meet the "independently operable" function even though the claims fail to clearly define such limitation in the claims. Furthermore, the invention applicant claiming is notoriously old in the art, as is evidenced by Flanders, U.S. Patent No. 6,366,592. Regarding claim 1-32, Flanders discloses a laser including an external cavity (See fig 10) comprising: (a) a channel selector tuner (410) configured to tune said laser (422) to a selected channel; and (b) an external cavity tuner (412) configured to tune said external cavity to a selected optical path length; (c) said channel selector tuner (410) independently operable with respect to said external cavity tuner (412) (See fig 10 that filter driver (714) controls the tunable filter (410) and length modulator driver (716) controls an external cavity tuner (412)).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Citation of Pertinent References

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The patent to Goto discloses Tunable Wavelength Light Source Incorporated Optical Filter Using Interferometer into External cavity, U.S. Patent No. 5444724.

Conclusion

6. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0759. The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the

organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Hung T. Vy
Art Unit 2828

June 26, 2003.

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